



Distributed Energy Resources

Responding to Energy Needs in the Central and Near West States

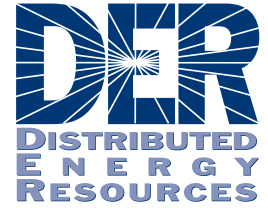
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Regional Office DER Goals



- Understand the regional energy situation and the DER needs and opportunities in the market place
- Insure Fair Competition with regards to Power Generation
 - Interconnection Standards
 - Utility tariffs
- Create awareness of DER Benefits to utilities, State Energy Offices, Federal Facilities, Utility Commissions and Energy Consumers
 - Increased Reliability
 - Insufficient generation
 - Transmission constraints
 - Fuel supply constraints
 - Need for fuel diversity
 - Reduced Energy Costs
 - Desire for Control and Choice
 - Emission Reductions



Regional Needs

- “Minnesota and the region are at a crossroads: The demand for energy continues to increase but the power generating facilities and transmission infrastructure used to deliver power are already being used to their maximum potential.” --Energy Policy and Conservation Report 2000, Minnesota Department of Commerce
- Last year’s Wisconsin Economic Summit identified as a key action item the need to “strengthen Wisconsin’s infrastructure in energy to ensure future conditions for growth.” -- State of Wisconsin, 2001 Energy Policy



Regional Needs

- “To maintain the Western Governor's commitment to a viable economy and a clean and healthy environment in the West, we need to pursue a national energy policy that will result in a diverse portfolio that will include conventional and alternate energy resource development, energy efficiency and conservation.”
Western Governors' Association, Policy Resolution 01-01
- “North Dakota is already one of the lowest cost energy-producing states, utilizing coal, natural gas, and hydropower. We will encourage the construction of new, efficient, environmentally friendly means for the production and transmission of energy.”
Governor John Hoeven, North Dakota



State Renewable and Efficiency Policies Chicago Region



	Net Metering	Public Benefit Funds (PBF)	Renewable Portfolio Standards (RPS)	Deregulation	Customer Choice of Renewable Electricity
Wisconsin	20 kW	\$32 million	2.2% by 2011		Green Pricing
Iowa	No max level		2%		
Minnesota	40 kW	\$94 million	3.6% by 2002 4.8% by 2012		Green Pricing
Ohio	No max level			Yes	Green Pricing
Missouri					
Indiana	Yes				
Michigan	Yes	\$50 million over 6 years proposed		Yes	Green Pricing
Illinois	40 kW	\$50 million	5% by 2010 15% by 2020	Yes	

Reference: Clean Power Surge: Ranking the States

State of Ohio: \$110 million revolving loan fund for residential and light commercial energy efficiency and renewable energy projects



State Renewable and Efficiency Policies Denver Region

State	Net Metering	PBF	RPS	Restructuring	Customer Choice
Montana	50 kw	\$50M		Yes	Green Pricing
North Dakota	100 kw				
New Mexico	10 kw	\$4M	5%	Delay	
Texas	50 kw		400 MW	Yes	Green Pricing
Wyoming	25 kw				

- Colorado, Kansas, Louisiana, Nebraska, South Dakota and Utah currently have no PBF, RPS, etc. laws or regulatory orders.
- One utility in Nebraska and one utility Colorado offer Green Pricing.



Midwest Energy Overview

	Electricity Consumption			Growth Rate		
	% Residential	% Commercial	% Industrial	% Residential	% Commercial	% Industrial
Wisconsin	30.8	26.1	42.0	1.5	2.9	2.6
Illinois	30.2	30.2	32.8	1.6	2.6	2.0
Indiana	29.7	21.0	48.7	2.0	2.5	2.5
Iowa	31.8	21.5	43.1	1.0	2.4	2.6
Minnesota	30.0	18.0	49.0	1.5	3.0	2.2
Missouri	41.0	34.6	22.9	2.8	3.1	2.8
Ohio	27.9	24.1	45.7	1.4	2.9	1.8
Michigan	29.7	33.7	35.8	1.6	5.6	2.0
	31.4	26.2	40.0	1.7	3.1	2.3

Midwest Electric consumption has been growing at about 2.3% per year

Reference: Energy Information Administration



Midwest Energy Overview

				% of Generation Capacity (MW)					
	Status	Population (mil)	Capacity (MW)	Coal	Nuclear	Petroleum	Nat Gas	Hydro	Non-Utility
Wisconsin	Importer	5.22	12,759	56.4	11.7	6.7	1.0	3.5	7.0
Illinois	Exporter	12.07	32,493	50.7	40.1	0.6	3.2	0.0	5.4
Indiana	Exporter	5.91	21,808	65.8	0.0	2.2	1.4	0.3	6.7
Iowa	Importer	2.86	8,702	65.7	6.0	7.6	1.5	1.5	3.8
Minnesota	Importer	4.76	10,118	60.3	16.4	9.9	0.4	1.5	10.2
Missouri	Exporter	5.44	16,339	66.8	7.0	6.5	2.7	7.3	0.7
Ohio	Importer	11.24	27,095	62.8	7.5	2.8	1.8	0.5	1.2
Michigan	Importer	9.82	24,634	49.1	15.9	9.9	1.6	0.4	10.9
Total or Avg		57.32	153,998	64.6	13.1	5.8	1.8	1.9	5.7

The Midwest has a diversified fuel mix providing its electric needs



Midwest Energy Overview

Net Metering

- ComEd Net Metering of Solar and Wind up to 40 kW
- State of Indiana, 1,000 kW-hr per month
- Michigan Public Service Commission approved change in Detroit Edison tariff allowing on-site generators to sell excess power back to utility at top incremental cost
- Ohio requires utilities to offer a net metering option to customer generators who own qualifying systems
- Iowa allows net metering of alternative energy generation systems up to a state-wide total of 105 MW
- Minnesota allows net metering up to 40 kW for qualifying facilities (no state-wide capacity limits)
- Wisconsin allows net metering of all technologies (renewable facilities are paid the retail rate, non-renewable sources are paid the avoided cost)



Interconnection Standards

- Texas Interconnection Standard -- “leading the way”
- Wisconsin Interconnection Collaborative
 - Finishing work on small DG (less than 20 kW)
 - Beginning to work on larger systems
 - Collaborative includes wide array of stake holders
 - Issues
 - Pre-approval of type tested paralleling equipment
 - Liability insurance
 - External disconnection switches
 - Certification and installation that meet code
 - Indemnification
- Michigan Interconnection Standard -- Michigan Public Service issued a draft for review
- Ohio, Illinois and Minnesota are actively investigating an interconnection standard



Near West Market Overview

Western Population and Total Consumption Increases
or (Decreases) from 1990 – 2000



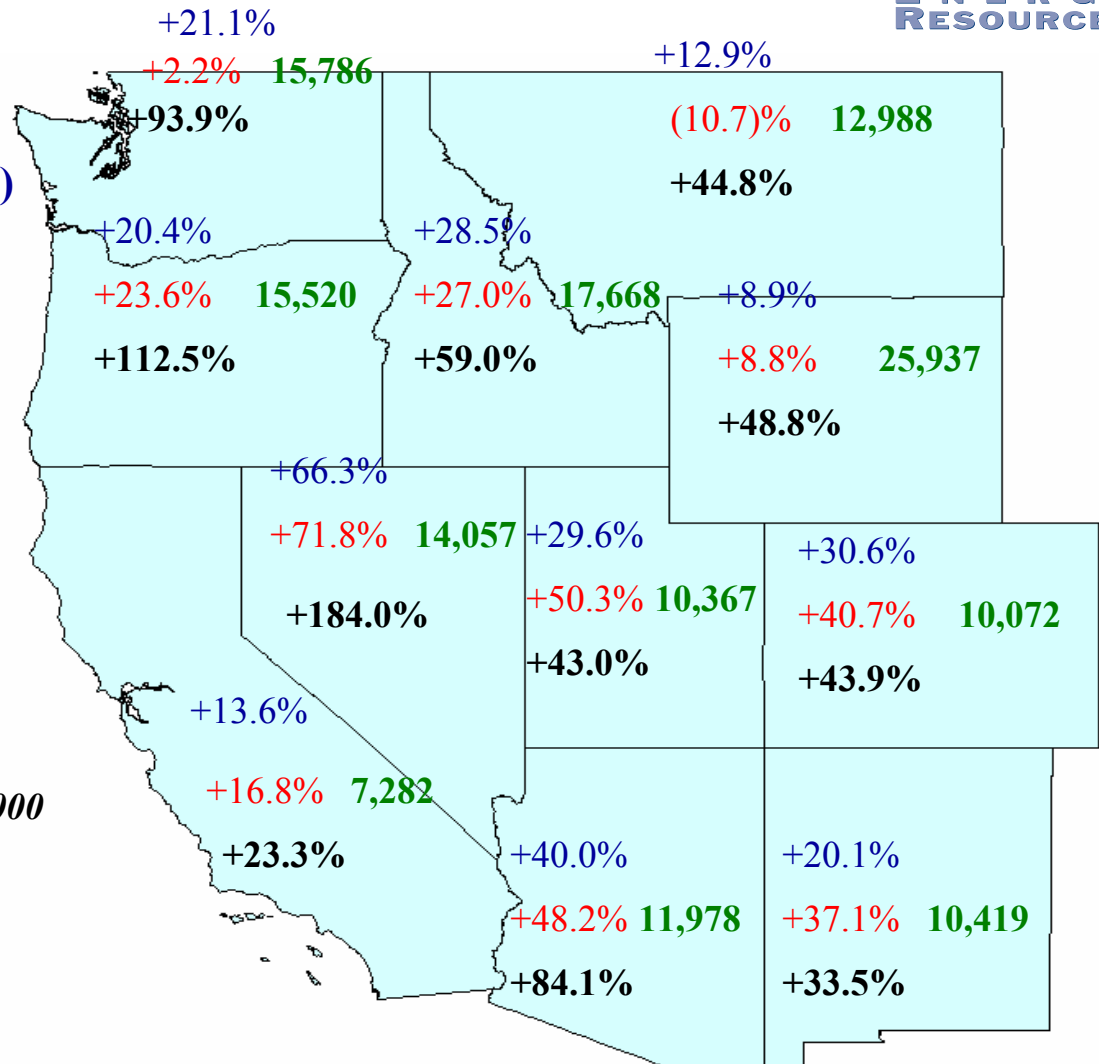
•**State population increase (decrease)
1990 – 2000*.**

•**State increase (decrease) in electric
consumption from 1990 – 2000*.**

•**State increase in gas consumption
from 1990 – 2000.**

•**State electric consumption per
capita for the year 2000 in KWhs.**

*Total electric consumption from 1990 to 2000
in the WSCC region grew approximately
21.6% while population grew 19.9%. Gas
consumption grew 40.3%*



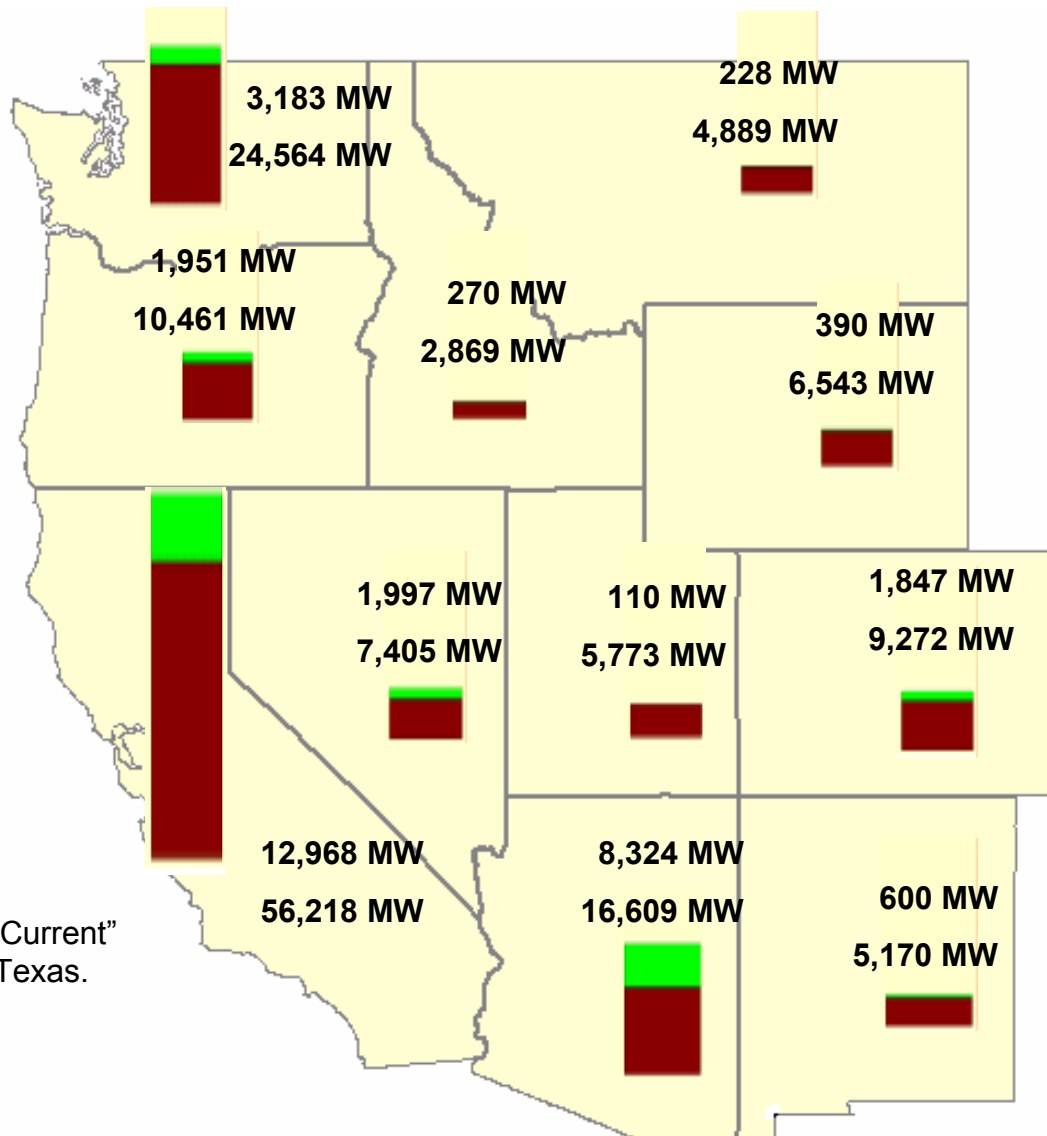
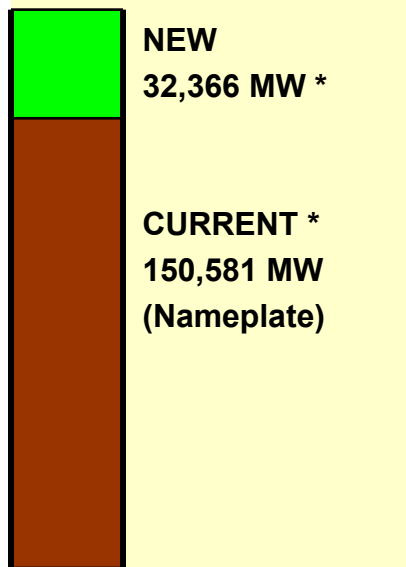
Sources: 1. Electric Sales and Revenue; EIA Table 6 from 1990-1998 for Millions of Kilowatts Purchased (Consumption). 2. *Data for 1999 and 2000; Electric Power Annual 2000 Volume I; EIA Tables A21, A22, A23, and A24 were used for preliminary totals for the year 2000 and actuals for 1999 (includes power marketing data). 3. Electric Sales and Revenue Table C1 for 1997 and 1998 for power marketing data. 4. Power market data for 1996 came from EIA Electric Sales and Revenue 1996, Table B1. 5. US Census Bureau @ <http://www.census.gov/population/estimates/statesst-99-3.txt> for population figures. 6. EIA Historical Natural Gas Annual-1930-1999 and Most Recent Monthly Data, http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/nat_data_publications and http://www.eia.doe.gov/emeu/states/_states_ng.html



Current and New Capacity Western States Projected to the Year 2003 (as of 8/01)



U.S. West Totals



* Includes 500 MW "New" and 809 MW "Current" of WSCC portions of South Dakota and Texas.

SOURCE: Resource Data International, Inc.
POWERdat, Data Version P3.1, Data Set July 01
Utility/Non-Utility Unit Ownership
RDI Consulting, NEWGen Release: 8/2001



Midwest Achievements



- The Chicago Regional Office was organized to support the DER Program in the Midwest
- Midwest CHP Initiative
 - Established a working group with five subcommittees
 - Policy, Interconnection, Market Development, Education, Permitting
 - Developed generic DER presentation material
- Midwest Application Center
 - CHP Baseline Analysis of Illinois and Michigan
- Organized “Managing your Peak Energy Loads” FEMP workshops
- Co-sponsored two day workshop with the American Society of Hospital Engineers (ASHE) and the American Gas Cooling Center (AGCC) in Chicago
- Co-sponsored the “MicroGeneration to PowerParks” Conference in Troy, Michigan with The State of Michigan Energy Department and others
- Co-sponsored “Sharing the Load: Local Electric Energy Generation and Distribution” Conference, St. Cloud, Minnesota
- Represented the DER Program at numerous regional events including the “Powering the Future” conference, National Transmission Grid Study-Detroit Hearing, Association of State Energy Research and Technology Transfer Institutions, Inc., etc.



Key Midwest Achievements



Mission:

Develop Technology Application Knowledge and the Educational Infrastructure Necessary to:

- Reduce Perceived Risks
- Foster CHP for Buildings as a Viable:
 - Technical and Financial Option
 - Energy and Environmental Option

Focus: *(Foster Project Identification)*

- Education
- Information
- Project Assistance





Key Midwest Achievements



Midwest CHP Initiative

- Mission: Lead the Midwest in encouraging the use of and in implementation of CHP technologies to drive the CHP road map action and support the goal of doubling CHP use by 2010
- Provide a central point of coordination and communication among the various stakeholder organizations in the region
- Current Membership
 - U.S. DOE Chicago Regional Office
 - Gas Technology Institute
 - University of Illinois--Energy Resource Center
 - States of Illinois, Indiana and Wisconsin
 - Michigan Public Utility Commission
 - U.S. EPA and Region 5
 - Environmental Law and Policy Center
 - NiSource
 - Delta Institute
 - Northeast-Midwest Institute
 - Exergy Partners
 - Building Owners Management Association
 - Laclede Gas



Denver Region Plans

- Colorado is planning an interconnection workshop for next March.
- New Mexico has had several workshops on DG and CHP. Currently identifying DG opportunities, including one in Santa Fe to test new interconnection rule.
- Texas planning educational workshop series on their Distributed Energy Standard Permit Rule.
- Wyoming is planning a workshop this spring on their new net metering law and interconnection requirements.
- Utah Energy Office undertaking study to identify and analyze economic, regulatory, and institutional policy issues of DG.
- Utah Public Service Commission is being asked to open a docket to assess potential opportunities for distributed energy resources.
- Utah State Energy Office advocating regulatory initiatives to streamline interconnection standards and develop a tariff framework to serve as an incentive for distributed generation.



Opportunities in the West

- Western Governors' Association is developing a long term energy policy, including a transmission plan that must consider distributed generation.
- WGA Western Regional Air Partnership established a goal to increase renewable energy generation to 10% by 2005 and 20% by 2015.
- Texas legislature has asked for a plan for the acceleration of the commercialization of fuel cells to be completed by the State Energy Office by Sept. 2002.

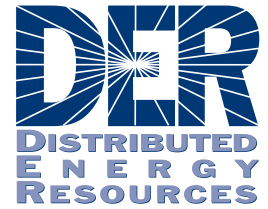


Chicago Region Plans

- Midwest CHP Initiative
 - Plan to meet with individual Utility Commissions regarding DER benefits and barriers
 - Planning a Midwest Interconnection Workshop on February 12th, 2002
- Support State Energy Offices
 - Plan to co-sponsor an Ohio Distributed Generation tradeshow with the Ohio Department of Commerce
- In coordination with the FEMP, lead a DER Regional Workshop for federal facilities
- Co-sponsor a DER workshop for hospital engineers and facility managers with the American Society of Hospital Engineers (ASHE) and the American Gas Cooling Center (AGCC)



Summary



- Chicago and Denver Regional Office
 - Fostering continued growth and interest in Distributed Energy Resources
 - Provide assistance to States
 - Educate public and businesses on benefits and opportunities
 - Assisting States overcome barriers
 - Interconnection Standards
 - Net Metering
 - Tariffs and other utility requirements
 - Demonstration projects and incentives where appropriate